



Evolution of Landside Access to the Port of Yantian

May 16, 2008

CHINA ACADEMY OF TRANSPORTATION SCIENCE
TRANSPORT INFORMATION CENTER

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Chapter 1

Abstract

Yantian Port developed into a leading global container port through more than 20 years of continuous construction and improvement efforts. The facility has been a primary catalyst for the area's development and expansion.

As the port's container volumes increased and the city of Shenzhen's population grew, the regulatory agencies took a very proactive role in promoting and enabling plans for roadway improvement projects to address the needs of both general public travel and freight movement.

Both the central and local governmental regulatory agencies played key crucial roles in establishing the rule of play on the port's planning, construction, investment, and management, and, more important, on issues related to transportation infrastructure facilities such as highways and railways leading to the port facility. As a result of such rules on operations and land use, funding for all projects was able to be secured through both public and private investment.

As documented in this report, an appropriate mechanism between public agencies and private investment companies for building, operating, and maintaining the port access road enabled projects otherwise deemed impossible to move forward. In particular, this case study discusses the status quo of highways connected to the Yantian Port and provides a brief introduction on the planning of the Shenzhen Yantian Port transportation system.

Chapter 2

The Area of Yantian Port

Geographic Location

Located on the eastern side of Shenzhen, Yantian Port is adjacent to Da Meisha and Xiao Meisha on the east, connecting Shatoujiao on the west and facing Kowloon Peninsula of Hong Kong across the sea to the south. The port is inside the Bay of Dapeng with an average water depth of about 20 kilometers (km). The natural coastal line suitable to wharf construction is 6.7 km long. Such a long coastal line with natural suitable water depth for a deep port is rare in China. Within the port area, the water depth of the fairway and front section of the wharf reaches 16 meters (m) with capacity to berth the world's largest container ships.

Potential port serving areas include the entire Pearl River (Xun River) Delta, the largest and most dense processing and production base in the world.



SOURCE: ©2009 GOOGLE-MAP DATA ©2009 MAPABC, TELE ATLAS

Figure 1. Map of Yantian Port area.

Opportunities

In the early 1980s, the Chinese government decided to adopt a policy of economic reform and opening up to the outside world. The coastal area of eastern China took the lead. The city of Shenzhen was defined as the first special economic zone of China. Based on the rapid economic growth in the Pearl River Delta region, the government of Shenzhen took the lead to start foundation construction of a deep water wharf on the coastal line in Dapeng Bay of Shenzhen to meet the huge demands of import and export trade as well as the important leading and supporting role of the port industry in regional economic development. Yantian Port was gradually developed in such an overall background.

Yantian Port would not have been developed without government support. As the economic reform and door-opening policy moved further into practice, the central government provided guarantees in policy and rule of law for the development of the port area. As a matter of fact, a series of laws and acts supporting port development and foreign investment was promulgated by the central government. These new laws and policies provided the legal basis and operation rules for the mode of fundraising for developing Yantian Port. At the same time, the municipal government of Shenzhen also put forward relevant policies that laid a good foundation for the smooth development of Yantian Port.


To ensure smooth port development, the municipal government of Shenzhen established Dongpeng Company to take responsibility for constructing Yantian Port at the beginning of the

development and construction. Based on the 1988 guideline of “comprehensive planning—from small to big, construction by stages and gradual development” of Yantian Port, the Planning Bureau of Shenzhen promulgated “Several Regulations on Administration of the Construction of Yantian Port,” which defined the approving procedure and inspection authority of the planning, construction, land use, and fund investment of Yantian Port. These regulations reconfirmed the role of Dongpeng Company in planning and constructing Yantian Port. Specific operation rules for the smooth development of Yantian Port and simplified procedures for inspecting and approving the development, construction, and land use of the port area were established. See Appendix A for details on the provisions and needs:

- Unified planning, construction, and operation of the development and construction of Yantian Port would be the responsibility of Shenzhen Dongpeng Company Ltd. (predecessor of Yantian Group). Comprehensive planning specifics and related public works should be submitted to the Construction Bureau of Shenzhen for examination and approval.
- According to regulations, Dongpeng Company should transfer all railway, highway, and public facilities it builds and the land on which they are built to Shenzhen City authorities. Except for the above-mentioned land and its uses, all other land use in the port area should be paid for to Shenzhen Authorities.
- According to the financial management regulation, Dongpeng Company should make special accounting management of the funds invested in developing Yantian Port with a detailed statement of development cost analysis, and submit it to the Municipal Audit Bureau of Shenzhen for examination and to the Financial Bureau, Construction Bureau, and Communications Bureau for the record.
- The design of key projects identified by the Construction Bureau should be examined and approved by the Construction Bureau. The designs of other construction projects delegated to Dongpeng Company for examination and the issuing of construction licenses should be handled by Dongpeng itself. However, these projects should be reported to the Construction Bureau for the record. Dongpeng Company would be responsible for ensuring that the construction units carry out the construction according to the requirements in the approved plans, project designs, and land use.
- The Construction Bureau conducts management of the development, construction, and engineering of the port area at a supervisory level. All works were organized by Dongpeng Company, but should be under the supervision and inspection of the municipal construction bureau, according to relevant regulations.

In addition to the new central government regulations, the provincial government also promulgated quite a few regulations, which further enhanced the development of Shenzhen's Yantian Port.

In 1990, the China central government promulgated “Interim Measures for the Administration of the Foreign-Invested Development and Management of Tracts of Land,” which gives clear provisions for foreign investors to develop coastal ports or bays, or river port sectors: “If a development area covers a coastal port or bay, or a river port sector, the coastline or riverside line shall be placed under the unified planning and administration of the state. The development enterprise may construct and operate a special port area and wharf in accordance with the unified planning of the state transport authorities.” The implementation of these measures lays legal foundation for foreign funds to be invested in Yantian. To satisfy the need for enhanced goods transportation after Hong Kong returned to the mainland, the Ministry of Commerce in 2003 promulgated the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA), further explaining the area of logistics service that had not been opened under the terms of the World Trade Organization (WTO) and permitting Hong Kong's companies to provide goods distribution and logistics services on the mainland in wholly owned form. CEPA provided



the conditions for Yantian Port to seek even wider development. Moreover, the Law of Port enforced in 2004 clearly pointed out for the first time that the state-owned and privately owned enterprises as well as foreign investors would be treated fairly when they invested in the construction and operation of Chinese ports, breaking the monopoly in the port industry and boosting competition between sectors.

Development Course

Initial Funding

In 1983, the *Report of the Municipal Government of Shenzhen on Applying to Japan International Cooperation Agency (JICA) for a Low-Interest Long-Term Loan for the Construction of Dapeng Bay Deep-Water Port* was submitted through the provincial government of Guangdong to the Ministry of Communications, the State Planning Commission (SPC), and the State Commission of Science and Technology for their joint examination and approval. The SPC was asked to list the project among those applying for a loan from the Japanese government in 1984. In June 1984, the International Cooperation Bureau of SPC approved listing the development and investigation project of the Shenzhen Dapeng Bay deep water port in the Program of Sino-Japan Intergovernment Science and Technology Cooperation. In September 1985, as approved by the State Commission of Science and Technology, the municipal government and JICA signed the "Meeting Minutes About JICA Helping Development Investigation of Dapeng Bay and at Last Using a Loan from the Japanese Government to Construct Yantian Port Area." Before the yen loan was extended in 1990, the construction of Yantian Port was started in 1988 with 23 million RMB, including the funds and loan invested by Dongpeng and allocations from the municipal government and the Ministry of Communications.

Economic Entity

To construct Yantian Port, Shenzhen needed to establish an operating entity to carry out all construction tasks. In January 1985, Shenzhen Dongpeng Enterprise Ltd. (predecessor of Yantian Port Group Co.) was officially established as approved by the People's Government of Shenzhen City. The municipal government endowed the company with authority to conduct comprehensive, balanced, and unified development of the coastal sector, the port backup land area with 6 kilometers from Jiujingkou to Zhengjiaozui in eastern Yantian, the water area of the port basin, and the channel and berth area in the frontage of the coast sector. This development had to be compatible with the unified planning of Shenzhen City. In January 1995, Dongpeng was renamed Shenzhen Yantian Port Group Ltd., and in 2000 it was again renamed Shenzhen City Yantian Port Group Co. Ltd. The State-Owned Assets Supervision and Administration Commission of Shenzhen City was the only investor with 100 per cent of the equity at that time, so the group is a state-owned enterprise.

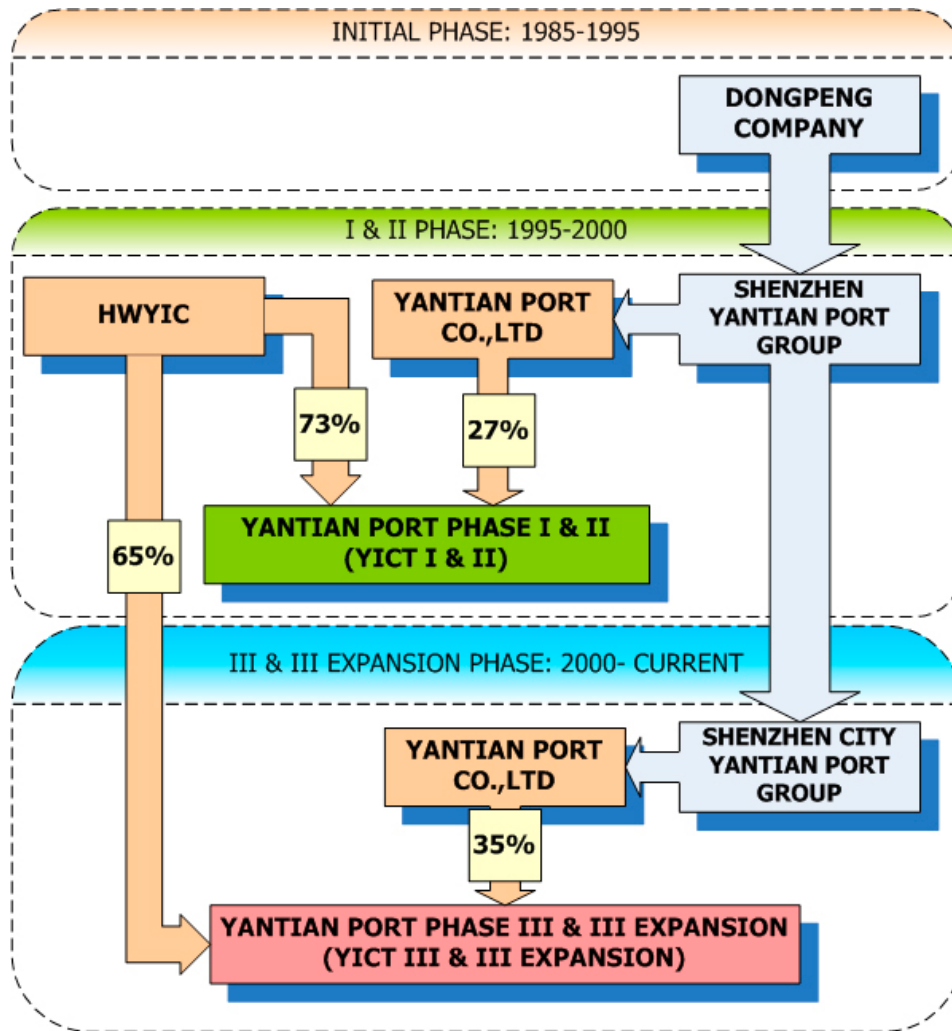


Figure 2. The evolution of Yantian Port Group from initial-phase project to third expansion-phase project.

Planning, Construction, and Operation

In August 1985, the Communist Party Committee of Shenzhen City approved the general planning of Yantian Port and pointed out that the port should be constructed and developed gradually from small to big in rolling form, mainly by introducing foreign capital and raising funds from many channels. In September 1985, the Municipal Planning Bureau of Shenzhen held a meeting to examine the general planning of the Yantian Port area, organized expert appraisal of the general planning for the first time, and approved it. The construction guideline of “comprehensive planning—from small to big, phased construction and gradual development” was established. Under this guideline, administration authorities of Shenzhen City updated the general planning of Yantian Port and other related planning three times (1985, 1994, and 2007), defining the development frameworks of Yantian Port in different periods and stages. See table 1 on the next page.

Table 1. Major planning of Yantian Port areas each year.

Year	Name of Planning
1985	General Planning of Yantian Port
1991	Adjustment of the General Planning of the Backside Area of Yantian Port and the Detailed Planning of Public Works
1994	General Planning of Yantian Port (updated)
1995	Detailed Control Planning of the Backup Land of Yantian Port
1996	General Municipal Planning of Shenzhen City (1996–2010)
1998	Yantian District Zoning Planning of Shenzhen City (1998–2010)
2000	Development of Strategy and Planning of Shenzhen Yantian Port Group
2007	General Planning of Yantian Port Area in Shenzhen

Except for the portion of funds for the initial construction phase allocated by the government, all other funds for the port construction were raised by the port enterprises themselves.

In the initial phase of Yantian Port construction (until 1990), Dongpeng invested 116 million RMB into the construction of Yantian Port. Of that, 69.10 million RMB was allocated by the government, 14.3 million RMB¹ was loaned from the banks through coordination of the municipal financial department, 3 million RMB was loaned by the Communications Ministry as appropriation, 8 million RMB was invested by the Municipal Investment Management Company, 7.9 million RMB was invested by the State Communications Investment Company, and 10 million RMB was borrowed from the Communications Bureau of the City. The total investment of the first and second phases of the project amounted to 7.2 billion HK dollars. The construction included five 0.4 million 20-foot equivalent unit (TEU) container berths. Yantian International Container Terminals Ltd.² took charge of the construction, operation, and management of the third-phase project with an investment of 8 billion RMB.³ This phase included four container berths with a capacity of more than 0.5 million TEU ships and related fitting facilities. The third-phase project has been completed. The expansion project officially started in 2005 and is expected to be completed by 2010. See table 2 on the next page.

¹ Estimated number based on the annual average exchange rate between the RMB and U.S. dollar in 1990.

² Yantian International Container Terminals Ltd.: The first phase project of Yantian Port was officially started in April 1989. In October 1993, Dongpeng (formerly Yantian Port Group) and Hong Kong Hutchison Whampoa Ltd. signed the agreement in Beijing to establish the joint venture—Shenzhen Yantian International Container Terminals Ltd. The Hong Kong fund covered 73 percent of the share of the first- and second-phase project and 65 percent of the third phase and its expansion project, so this is a Hong Kong-invested enterprise.

³ Estimated number (across various years), 6.6 billion HK dollar equivalents.

Table 2. Basic situation of Yantian Port foundation facility construction.

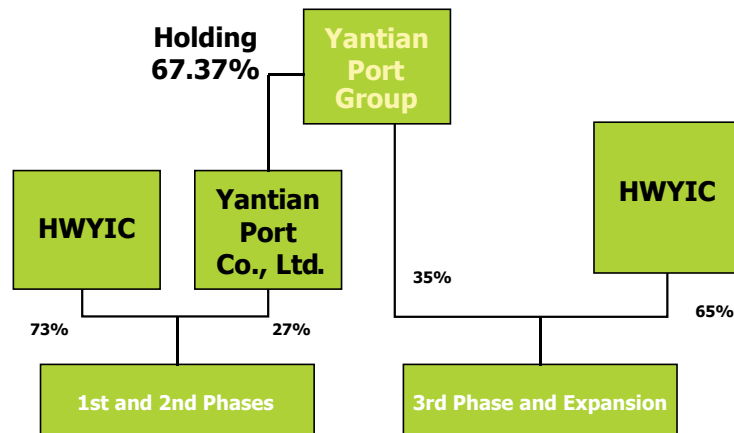
Period	Inspection and Acceptance Year	Process of Development
Initial Phase Project	1989	The First Engineering Co. of the Ministry of Communication Fourth Harbor Engineering Bureau started the initial phase of the construction in June 1988. The port was constructed and a trial operation ceremony was held in March 1989. The initial project included three 1,000-ton and one 3,000-ton berths completed in main bodies.
Phase I	1994	0.5 million TEU berth of the first-phase project of Yantian Port was officially started in April 1989. The first-phase project was examined and accepted by the state in April 1994. The first-phase project included two 50,000-ton container berths.
Phase II	2000	The second-phase project of Yantian Port was officially started in December 1996, including three 0.4 million TEU container berths. The second-phase project was examined and accepted by the state in July 2000.
Phase III and construction of the western port area	2006	The initial works, including application, examination, and approval of the third-phase project of Yantian Port, were all completed in December 2002. In August 2006, the third-phase project of a container terminal in the Yantian port area was inspected and accepted by the state, and the port area development was gradually devoted to more efforts. The port area boasted 13 productive berths (all over 0.5 million TEU) and five nonproductive wharfs. The piling area covered 1.5 million m ² and the container storing capacity reached 190,000 TEU.
Phase III expansion project	2010 (Expected)	In March 2005, the third-phase expansion project was officially started. The construction includes five 0.4 to 0.5 million TEU berths and one 30,000-ton specialized container berth. The third-phase expansion project is now under construction and is expected to be finished in 2010.

SOURCE: ANALYSIS ON THE CONTRIBUTION OF YANTIAN PORT AREA TO THE REGIONAL ECONOMY, 2005

Management and Operation

Yantian Port Group and the Yantian International Container Terminal Company Ltd. (YICT) jointly operate and manage Yantian Port. Yantian Port Group has seven subholding enterprises and 10 joint stock enterprises (excluding the 12 enterprises subordinate to Yantian Port Co. Ltd.). Under the leadership of the Municipal Government of Shenzhen, Shenzhen Yantian Port Group established Yantian Port Co. Ltd. of Shenzhen City by itself in 1997 through asset reconstruction and business reorganization. In the same year, the company's stock, Yantian-Port A, was listed on the Shenzhen Stock Exchange. As the biggest stockholder, Yantian Port Group holds 67.37 percent of the shares of Yantian Port.

Under the shareholding structure of the first- and second-phase project of Yantian Port, 27 percent and 73 percent respectively are shared by the listed Yantian Port Co. Ltd. and Hutchison Whampoa Yantian Investment Co. Ltd. (HWYIC). The third-phase project of Yantian Port was jointly completed by HWYIC and Yantian Port Group, the largest shareholder of Yantian Port, with an outside consortium sharing 65 percent and Yantian Group sharing 35 percent of the total investment.



SOURCE: YICT

Figure 3. Shareholding structure of Yantian Port in stages.

Through construction of the first-, second-, and third-phase projects and expansion of the third-phase project of Yantian Port, the production capacity of the port grew. By 2006, the achieved container throughput of Yantian Port was 8.86 million TEU, 11.6 percent more than the year before, and loaded container throughput reached 4.91 million TEU. The single port throughput of Yantian Port holds the top position in China. Today, 34 world-famous shipping companies provide services through 76 international shipping lines from China to the world. Yantian Port has become a major hub port of southern China. Table 3 lists annual container throughput of Yantian Port since opening.

Table 3. Annual container throughput of Yantian Port (1993–2006).

	Container Throughput of Yantian Port Area (million TEU)	Container Throughput of Shenzhen Port ⁴ (million TEU)	Ranking of Shenzhen Port Container Throughput in China	Ranking of Shenzhen Port Container Throughput in the World
1993	0.002	-	-	-
1994	0.013	0.179	8	-
1995	0.106	0.284	7	-
1996	0.354	0.589	7	-
1997	0.683	1.148	4	35
1998	1.038	1.952	2	17
1999	1.588	2.978	2	11
2000	2.147	3.993	2	11
2001	2.751	5.075	2	8
2002	4.181	7.614	2	6
2003	5.449	10.620	2	4
2004	6.481	13.655	2	4
2005	7.661	16.196	2	4
2006	8.864	18.470	2	4

SOURCE: YICT

⁴ After port administration system reform, Shekou, Chiwan, Mawan, Dongjiaotou, Yantian, and Xiatong Ports are collectively called Shenzhen Port.

Chapter 3

Highways Connected to the Port

Foundation Facilities of Port Roads

The highway network connecting the Yantian Port area was gradually perfected along with the development and expansion of the port area. Since the port opened in 1994, the roads surrounding Yantian Port have undergone a rapid development—from one highway and one tunnel to four highways, four tunnels, and one interchange. Taking advantage of different forms of transportation from internal port transport to external express, Yantian Port has developed the transport capacity with scientific methods. The daily road traffic capacity saw a great leap forward from 25,000 vehicles in 1994 to 275,000 in 2006. From 1987 to 2005, investment of the Municipal Government of Shenzhen and YICT in the surrounding road networks constructed or under construction totaled more than 5 billion RMB. The mileage of the major port expressway exceeded 75 kilometers. From 2006 to 2007, the Municipal Government of Shenzhen invested about 4 billion RMB in port traffic development. The new roads totaled 30 kilometers.

In recent years, expressways have greatly increased the collection, distribution, and transportation capacity of Yantian Port. After Hui-Yan Expressway was constructed and opened to traffic, Yan-Ba and Yan-Pai Expressways were also constructed successively. Today, the three expressways serve the collection, distribution, and transportation functions of Yantian Port. Among daily average traffic on these three highways, about 60 percent⁵ are trucks (container trucks). Yan-Pai Expressway is a new road constructed and opened to traffic in May 2006 with six two-way lanes. Traffic capacity is 100,000 passenger car units (PCU). The new, multilane roads have increased the traffic capacity of Yantian Port area from 175,000 PCU to 275,000 PCU. See table 4.

Table 4. Basic situation of the three major port expressways.

	Hui-Yan Expressway	Yan-Ba Expressway	Yan-Pai Expressway
Designed mileage (km)	32	28.92	15.2
Designed speed (km/h)	80	80	100
Number of two-way lanes (lane)	4	6	6
Designed road capacity (vehicles)	25,000	100,000	100,000
Year of opening traffic	1994	Section A in 2001 Section B in 2003	2006
Tolled or not	yes	yes	yes

⁵ This information is from an investigation in the Shenzhen Municipal Transport Bureau.

Table 5. Road infrastructure facilities connecting Yantian Port and related social and transport status in main development period.

Year	Status of Infrastructure		Related Indicators of Social and Transport					
	Infrastructure Name	Planning Purpose	Container Turnover of Yantian Port Area (10,000 TEU)	Container Turnover of Shenzhen Port (10,000 TEU)	Vehicles Registered (million)	Population (10,000)	Total Mileage of Highways in Shenzhen (km)	Total Mileage of Expressways (km)
1987	First phase of Wutongshan Tunnel (two two-way lanes)	Public/freight	/	–	–	115.4 ⁶	802.6	–
1994	Hui-Yan Expressway (four two-way lanes)	Public/freight	1.3	17.9	–	335.5	971.6	7.8
1997	Second phase of Wutongshan Tunnel (four two-way lanes)	Public/freight	63.8	114.7	–	379.6	1211.1	108
2002	Wutongshan mountain winding road (two two-way lanes)	Specialized for public	418.1	761.4	0.51	504.3	1510	196.1
2003	Yan-Ba Expressway (six two-way lanes)	Public/freight	525.8	1065.1	0.58	557.4	1539.9	202.9
	Mingzhu Interchange (12 two-way lanes)	Public/freight						
2006	Yan-Pai Expressway (six two-way lanes)	Public/freight	735.3	1847.02	0.97	846.4	1929.5	268
2007 ⁷	Shen-Yan Second Tunnel ⁸ (six two-way lanes)	Specialized for public	– ⁹	–	1.13	861.6	–	–
	Port Accommodation Road (six two-way lanes)	Specialized for freight						
	Wutongshan Interchange (six two-way lanes)	Public/freight						

⁶ 1984 data.

⁷ Under construction.

⁸ So-called "Second Access to Yantian."

⁹ Related transport data is publicly available.



Figure 4. Satellite map of the road planning of Yantian Port (February 2007).



Figure 5. Location of Yantian Port and highways connected to the port area.

Planning and Decisionmaking

An investigation of the planning of and decisionmaking on the port road facilities in Yantian Port area by the Municipal Communications Bureau of Shenzhen, Shenzhen Highway Co. Ltd., Yantian Port Group, and Yantian International Container Terminals Ltd. concluded that “the port transport planned by the government must consider integrating the general public usage, industrial usage, people’s demands in travel, and other social factors based on the development need of Yantian Port area. The toll highway projects should be invested and operated as authorized by the government.” The role of the government is decisive.

The role of the government in road planning and construction is based on current Chinese law. The Law of Highway has clear provisions on the function and responsibility of administrative departments at each level in the planning and construction of highways:

Plans for national highways drive other highway investments. Provincial highways shall be consistent with those for national highways, plans for county roads shall be consistent with those for provincial highways, and plans for township roads shall be consistent with those for county roads. Plans for national highways shall be made by the competent department for communications under the State Council in conjunction with the relevant departments under the State Council and in consultation with the provinces’ autonomous regions, and municipalities directly under the Central Government along the way where such highways are to be built. These plans shall be submitted to the State Council for approval. Plans for provincial highways shall be made by the competent departments for communications under the people’s governments of the provinces, autonomous regions, and municipalities directly under the Central Government in conjunction with the relevant departments at the same level and in consultation with the people’s governments at the next lower level along the way where such highways are to be built and shall be submitted to the people’s governments of the provinces, autonomous regions, or municipalities directly under the Central Government for approval and to the competent department for communications under the State Council for the record. Plans for county roads shall be made by the competent departments for communications under the people’s governments at the county level in conjunction with the relevant departments at the level and shall be submitted to the people’s governments at the next higher level for approval after examination and finalization by the people’s governments at the county level. Plans for township roads shall be made by the people’s governments of townships, nationality townships, or towns with the help of the competent departments for communications under the people’s governments at the county level and shall be submitted to the people’s governments at the county level for approval. Plans for county roads or township roads that are approved in accordance with the provisions in the third or fourth article shall be submitted to the competent departments for communications under the people’s governments at the next higher level for the record.

Plans for accommodation roads shall be made by the unit in charge of such roads and shall, after examination and finalization by the competent department in charge of the said unit at the next higher level, be submitted to the competent department for communications under the people’s government at or above the county level for examination and verification. Plans for accommodation roads shall be consistent with those for highways. When the competent department for communications under the people’s government at or above the county level finds that plans for accommodation roads are not consistent with those for national highways, provincial highways, county roads, or township roads, it shall make suggestions for revision, and the competent department and the unit in charge of the accommodation roads shall revise the plans accordingly.

According to the provisions of the Law of Highway, planning of highway construction except for accommodation roads should be made by transport authorities at different government levels, and planning of accommodation roads should be made by enterprises of Yantian Port in

charge of the accommodation roads. However, the planning also should be done by referring to the actual situation of planning nonaccommodation roads. The final authority to examine and modify plans belongs to the departments in charge of that area.

For local operation, the Municipal Government of Shenzhen states in "Several Provisions on the Construction and Management of Yantian Port" that "General planning and detailed plans of Yantian Port and public works plans should be submitted to the Construction Bureau of Shenzhen (hereinafter referred to as Construction Bureau) for examination and approval. The railway, highway, public works, and other public facilities constructed by Dongpeng according to the plans and the land used in the construction should be transferred to related departments for management according to provisions concerned."

Government plays a leading role in planning and decisionmaking on construction process, but at the same time the suggestions and interests of enterprises in these plans and decisions should not be denied. The investigation of the Communications Bureau and YICT also shows that although the plan for the foundation facilities of the port area was made by the government, about 60 percent of the profit tax is from Yantian Port Group under the special development mode of "developing the area and prospering the city with the port." As a result of this profit-tax issue, the government cannot avoid communication with related enterprises like Yantian Port Group in the process of planning the foundation facilities. The result of the planned distribution facilities of Yantian Port area clearly reflects the consideration of the interest of the development of Yantian Port. An example is the accommodation roads in Yantian Port.

Table 6 shows the major decisions on the construction of roads mainly bearing the function of port distribution.

Table 6. Decisions on the major port highways.

Project Name	Plan Initiators	Direction	Planning Decision
Hui-Yan Expressway	Government and Dongpeng	Toward Huizhou (northeast)	The first expressway connecting to Yantian Port, it is the major hub for land distribution of the port.
Yan-Ba Expressway	Government	Toward Shantou (east)	It satisfies the demands of the steadily growing transport volume and container transport in Yantian Port, promotes the development of travel and economy in the eastern part, coordinates emergency evacuation of Dayawan Nuclear Power Plant, and enables the development of Shell's large-scale petrochemical base in Huizhou City.
Yan-Pai Expressway	Government	Toward Dongguan (northeast)	Container trucks can quickly leave the port directly through Yan-Pai Expressway.
Port accommodation road of Yantian Port	Government, Yantian Port Group, and YICT	Connecting Yan-Pai Expressway (north)	The road is constructed as an expansion of Yan-Pai Expressway, and is only for port distribution and trucks.

Investment and Construction of Port Highways

The mode of investment and fundraising for the transport foundation facility construction of Yantian Port can be divided into two periods. The first is the initial construction period, with enterprise (Yantian Port Group) exercising the leading role and the government providing assistance. The second is the rapid development period, with government departments exercising the leading role and the enterprise providing support.

- **Road investment in the initial period.** Investigation by Yantian Port Group and the Communications Bureau of Shenzhen City showed that the investment in the initial period was too much for the government to shoulder at that time. Therefore, the government offered Dongpeng land-use rights in the Yantian Port area and the port backup land area

(examined and approved by the Bureau of State Land and Resources through corresponding policy). According to the policy, the company had the right to rent¹⁰ the backup land of Yantian Port for capital funds needed for port and road construction, addressing the shortage of funds for constructing the Yantian Port project. An officer from the Municipal Communications Bureau of Shenzhen City said: "The government had no money at that time. All the road foundation facilities in the Yantian Port area were constructed with funds invested by Yantian Port Group (Dongpeng). Hui-Yan Expressway project¹¹ was incorporated at that time into the first-phase project of Yantian Port and completed as planned by the government."

- **Road investment in the current phase.** Along with the steady growth of Yantian Port, the economy of Shenzhen City has become stronger and local finance has become more abundant, laying a good financial foundation for perfecting the transport networks in Shenzhen area. The government has gradually started to build roads with its own funds and take the initiative in construction. The government plans roads based on comprehensive factors of society instead of giving too much consideration to the port enterprises because of funding gaps as in the initial stage. The result of our investigation indicates that roads constructed in the mid-to-late phase of the port and other related roads under construction in the Yantian Port area were partly funded by the government. These roads include Yan-Ba Expressway, Yan-Pai Expressway, and the outer ring express of Shenzhen City. At the same time, the reconstruction and expansion projects of the public roads and port boundary roads in the backup land area of Yantian Port are still funded by Yantian Port Group as a supplement to the government investment.



Figure 6. Yan-Pai Expressway.

¹⁰ According the Land Law in China, any business group, companies, organizations, and persons are forbidden to occupy, trade, and transfer without the relevant authorities' permission. Land can be rented with permission from the relevant authorities, but not traded.

¹¹ Hui-Yan Expressway was managed by Shenzhen Hui-Yan Expressway Co. Ltd., a joint venture between Yantian Port Holdings Co. Ltd. and Highway Development Co. Ltd. of Guangdong Province, established in 1991. The registered capital was 30 million RMB with Yantian Port Group sharing two-thirds and Guangdong Highway Development sharing one-third.

Operation Mode

Current transport foundation facilities crossing Yantian Port area are basically under the management and maintenance of the municipal government, while the main expressways are managed by Shenzhen Highway Co. Ltd. The funds for road construction and maintenance are mainly from the benefits created by the toll highway.

Hui-Yan Expressway's main equity is owned by Yantian Port Group and managed by Shenzhen Hui-Yan Expressway Co. Ltd. The highest decisionmaking body of the company is the general shareholders' meeting and daily management is conducted by the management group under the leadership of the board of directors. The operation target of the company is submitted to the board of directors for examination and approval, and the company implements annual operation and investment plans as approved in steps. The cost recovery of Hui-Yan Expressway has been fulfilled. Income has reached three times the total cost of the highway. The maintenance cost is from the toll, which accounts for about 5.23 percent of the total income.

Wutongshan Toll Tunnel is a build-operate-transfer (BOT) public works project, constructed with the investment of enterprise ("enterprise" is a common and general term for a business entity, such as a firm or company) funds and operated by the enterprise. The enterprise has the right to toll for a limited period coordinated with the government. After the period, the project is turned over to the government. Hong Kong Dajia Group, a subordinate of Hutchison Whampoa Group, holds a 50 percent share of Wutongshan Tunnel Co. Ltd., enjoying 30 years of tolling rights on the tunnel. To pass the tunnel, a vehicle pays 10 to 30 RMB. Today, the connection between the urban area and eastern part of Shenzhen (toward Yantian) is mainly through the tunnel. About 15,000 container trucks (both directions) need to pass the tunnel daily.

Planning of Port Accommodation Road¹²

The idea of the Yantian Port accommodation road was raised in the Transportation Plan for Road Collection, Distribution, and Transportation System of Yantian Port, Shenzhen City. The planning phase for port accommodation road construction is complete and application for the project has been approved. The road starts at the Mingzhu Interchange, goes through the overpass of Yantian Road, and connects to the Yan-Pai Expressway. It is designed as a completely closed, truck-only road with four two-way lanes. The length is 2,908 meters. Yantian Port Group is in charge of construction. The funds invested were raised by the enterprise itself.

Cause of Planning


Along with the development of Yantian Port, container throughput has seen rapid growth, causing pressure on port road collection, distribution, and transportation capacity. In the initial period of port construction in 1994 and 1995, Wutongshan Tunnel had two two-way lanes. Vehicles to and from Yantian Port area were often jammed in the Hedong area, seriously blocking port distribution. After the second-phase construction of the Yantian Port road infrastructure (Yan-Ba and Yan-Pai Expressways), this problem was resolved. However, the problem emerged again recently (see Appendix B for related traffic volume on three major expressways).

Congestion is always the largest issue for the development of Yantian Port. The main reason to construct a port accommodation road is to avoid interaction between social vehicles and container vehicles, reducing time delays entering and leaving the port, saving transportation costs, and reducing external noneconomic problems.

Planning Methods

The decline of transportation efficiency and external noneconomic problems caused by congestion prompted the Municipal Government of Shenzhen and Yantian Port Group to

¹² A dedicated truck lane is called a "port accommodation road (access)" in local terms, so this report follows that custom.



investigate the issue and reach consensus on the problem and potential solutions. Based on the development status of the Yantian Port area and the actual use of the surrounding roads, the Transport Planning Consultation Workgroup Committee on Road Collection, Distribution, and Transportation System of Yantian Port was established to optimize the collection, distribution, and transportation system in the port. Shenzhen City, along with the Municipal Bureau of State Land of Shenzhen, Yantian Port Group Co. Ltd., and Yantian International Container Terminals Co. Ltd., invited four domestic and foreign transport consulting agencies in 1997 to provide planning consultation according to the "Assignment of Traffic Planning Consultation for the Road Collection, Distribution, and Transportation System of Yantian Port, Shenzhen City." This plan defined the direction for today's development of the collection, distribution, and transportation system in the backup land area of Yantian Port.

In planning and designing, main considerations were given to port development (including the fitting facilities), cargo assembly, and distribution. At the same time impacts from areas other than the planned area were also taken into consideration. The plan gave sufficient consideration to the operation of the collection, distribution, and transportation system. It also analyzed the transport organization and transport demands.

Analysis on Transport Demand

Analysis on the transport demand is basically a flexible analysis of all possible development of traffic demand with available technical data and traffic analysis parameters as the main basis. The purpose is to develop recommendations on the planning of transport facilities on the possibility, scale, and priority of construction, ensuring the plan is adaptable to the potential development. In the planning process, analysis on the transport demand was divided into two parts:

- **Analysis of the collection, distribution, and transportation system of the port area.** The research focused mainly on transport demands in several areas, including port collection, distribution, and transportation transport; noncollection, distribution, and transportation transport; cross-border transport; and internal transport. Transport demands are expressed in container truck times per hour and PCU per hour.
- **Analysis on the key controlling sections.** Under the influence of the landform and transport characteristics, part of the road sections in the research area became a threshold influencing the whole area's transport organization and planning. The traffic intensity exerted direct influence to the traffic level of the whole area's transport service. In other words, regional transport planning was controlled by these sections. Therefore, to review the status of the transport operation in planning Yantian Port transport, sectional analysis was done in two layers: the road connecting the land area to the external transport system and the road connecting the port area to the land area transport system (out and in).

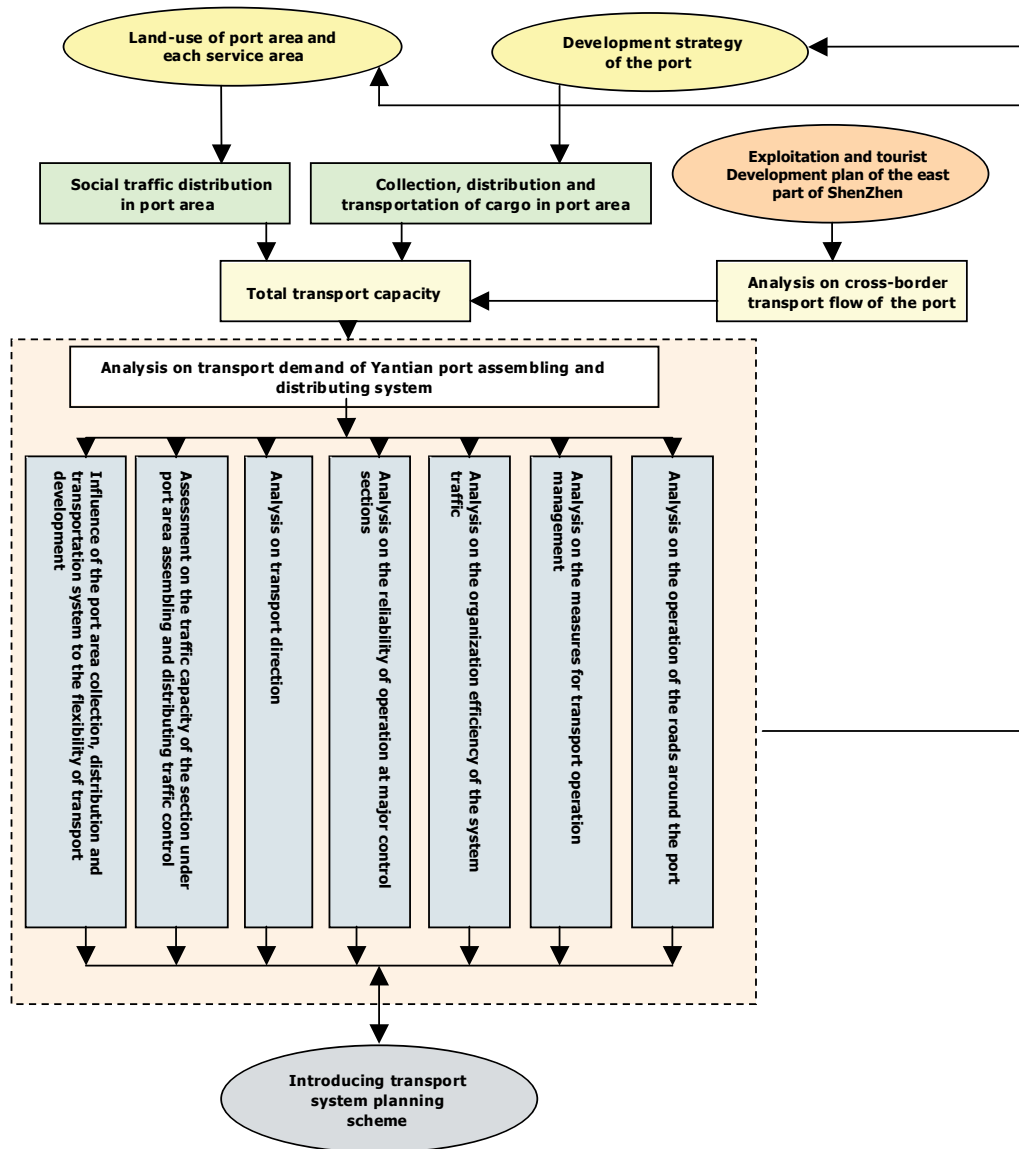


Figure 7. Overall technical consideration of the road collection, distribution, and transportation planning scheme of Yantian Port.

Defining Planning Scheme

The planning of the Yantian Port road collection, distribution, and transportation system was done mainly for port collection, distribution, and transportation. At the same time it provided comprehensive consideration of the operation of various kinds of transport flows within the area of research. The principle of this plan was to ensure the development of pillar industries,¹³ raise the reliability of system transport operation, accommodate the possibility of future development, ration distribution of transport resources, and consider the actual situation to provide convenience to the construction and environmental improvement. In analyzing the system transport demand and external connection road functions, the consultation body worked out two concepts of system schemes and designed three sets of system schemes. To compare the system functional harmony, transport organization and operation, environmental impact, construction feasibility, flexibility of development, and investment of the three sets of schemes, it adopted the first scheme as the recommended one. Figure 7 is the planning concept for the system scheme.

¹³ Top-three pillar industries of Shenzhen are high-tech, finance, and logistics.

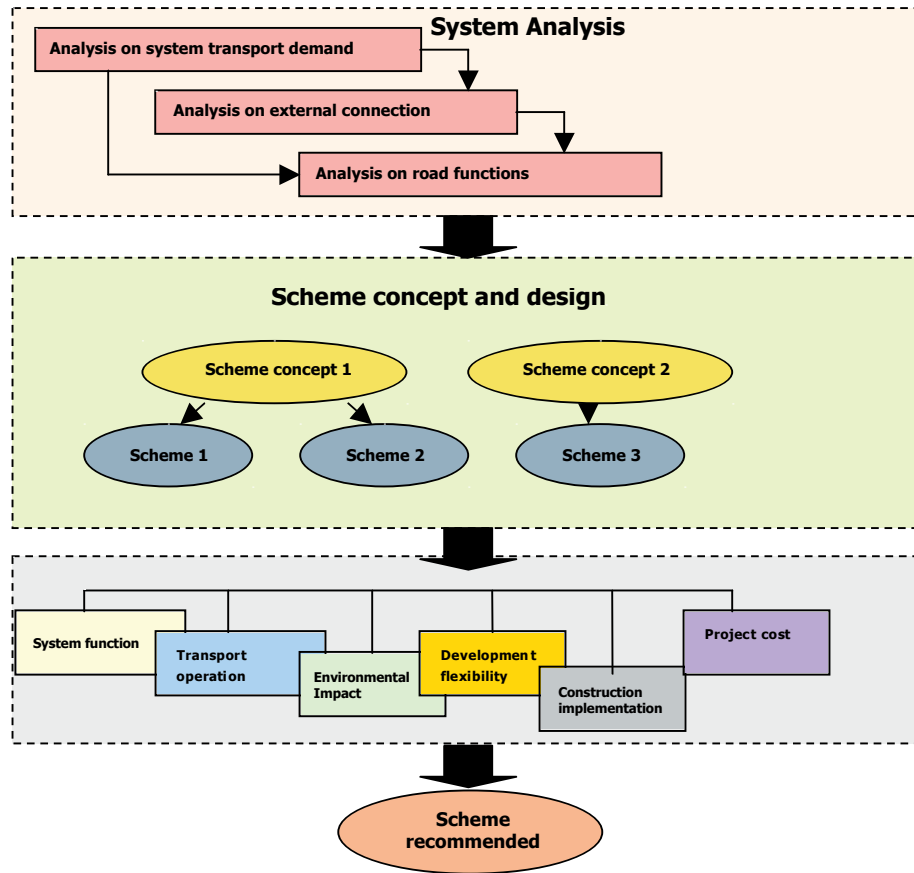


Figure 8. Design concept for the system scheme planning of road collection, distribution, and transportation system planning.

As a result of its research, the consultation body determined a final design scheme: separating the traffic flow of social vehicles from container trucks to and from the port to avoid interference and realizing the final target of raising collection, distribution, and transportation capacity of the port by building an interchange, broadening the portside roads, and constructing a port accommodation road.



The port accommodation road under construction (extending the line of Yan-Pai Expressway) connects with the second channel of Shen-Yan Road and Shen-Tan Road at Gate A, and separates trucks and public vehicles with a multilayer overpass.

Figure 9. Wutongshan multilayer overpass separates cargo trucks from public vehicles.

Chapter 4

Railways Connected to the Port

General Situation

Ping-Yan Railway starts in the south at Yantian and ends in the north at Pinghu, a total length of 22.7 kilometers. This is an accommodation port railway. Connecting Jing-Jiu and Jing-Guang Railways, this railway line extended the port service to the whole province of Guangdong and large inland areas in the provinces of Hunan, Sichuan, Yunnan, Guizhou, and Jiangxi. Ping-Yan Railway provides direct transportation services from factories to the wharf for many import and export businesses. Such services include custom application, trailer, train, storage, free piling, and storage of empty containers.

The construction of a new port accommodation railway line from the Yantian Port area to Guang-Shen Railway was started in January 1990 as agreed by the State Council and commended by the State Planning Commission. The construction of Ping-Yan port railway was started in November 1990. It was completed and in operation by 1993. Today, there are two stations¹⁴ on the Ping-Yan Railway line, Yantian Station and Henggang Station. Yantian Station is the terminal of Ping-Yan Railway. Its main operations include accepting and starting trains, marshalling wagons in the port area, taking wagons to and from the wharf, and warehousing the cargo yard of the port station. Henggang Station is on the midway of the railway.

Fundraising and Shares

Ping-Yan Railway was a state-owned enterprise at the beginning. With the development of Yantian Port, the equity of the railway was sold to YICT Co. Ltd., held by Hong Kong shareholders.

Shenzhen Tiejing Enterprise Development Co. Ltd. (STED) was founded in April 1991 and renamed Shenzhen Ping-Yan Railway Co. Ltd. (SPR) in April 1995. The company is a joint venture of Yantian Port Group (formerly Dongpeng) and the Thirteenth Engineering Bureau of the Ministry of Railway. The company's registered capital is 150 million RMB, with Yantian Port Group sharing 84 percent. In 2003, the right to operate the port railway (from the port area to the railway networks of the whole country) was bought by overseas shareholders (sharing 65 percent), led by Hutchison Whampoa and Shenzhen's Yantian Port Group (sharing 35 percent) with 350 million RMB as registered capital. The operation rights last 50 years. Today, the construction and operation of Ping-Yan Railway are conducted by Shenzhen Ping-Yan Railway Co. Ltd.

Block Trains

The function of Ping-Yan Railway is defined by YICT to perfect the collection, distribution, and transportation function and expand YICT's cargo resources to the hinterland to raise YICT's competitiveness in southern China ports. The Ping-Yan Railway line extends port services to the inland provinces such as Hunan, Yunnan, Sichuan, and Guizhou. Ping-Yan Railway is working with various local municipal governments to establish five scheduled block trains from Chengdu in Sichuan Province to Shenzhen and from Nanchang to Shenzhen. Three block train services are now operational:

- In 2004, five scheduled container block trains from Dalang of Guangzhou to Yantian opened.

¹⁴ Ping-Yan Railway is connected to the state railway by Pinghu Southern Station, operated by Guangshen Railway Company.

- In 2007, container block trains from Yantian to Huangpu of Guangzhou opened.
- In 2007, block trains from Yantian to Kunming opened.



Figure 10. Ping-Yan Railway and the state railway system



Ping-Yan Railway has two lines, but only one has been put into operation.



Ping-Yan Railway has five locomotives, all of which have gas engines. All the other railways in China use electric locomotives.




A sling cart is in operation. In some stations in other regions, loading equipment is backward.

Figure 11. Ping-Yan Railway.

Operation and Problems

During the planning and construction periods, Ping-Yan Railway was owned by a state-owned enterprise and managed and operated by Tiepeng Enterprise Development Co. Ltd. of Shenzhen City. Since Yantian International Container Terminals Ltd. (YICT) held the shares in 2003, the management and operation right of the enterprises has been controlled by Hong Kong stockholders.

Ping-Yan Railway is now operated as a small-scale independent railway company. It has five locomotives and its own train operators and maintenance, loading, and lifting equipment. In



other words, all the operation, management, maintenance, and repair of the railway are done without any government subsidy. Ping-Yan is a monorail line classified as an enterprise second-class railway, and it connects with the state railway network. Although it has two operation lines (double track capacity), only one line is in use because of insufficient workload. In 2007, the throughput of Ping-Yan Railway exceeded 36,800 TEU, accounting for about 3 percent of the total throughput of the port area.

The port accommodation railway should have played an important role in the port area, particularly in expanding economic development to the port hinterland area, but in reality it is not so. The operation and management system of China's railway system is still provided by a combination of the government and enterprises (see "China Railway Management System and Problems"), and Ping-Yan Railway faces many operations problems. The main problems are the connection between the local railways operated by enterprises and the state-owned railways and the uncompetitive freight rate.

Relationship Between Ping-Yan Railway and State Railway Networks

Because Ping-Yan's operation right was sold to Hong Kong investors, the relationship between Ping-Yan Railway and the state railway networks (the Ministry of Railway) is a delicate coexistence of independence and cooperation.

Ping-Yan Railway is connected with the state-owned railways, but it is not combined with the state railway networks. In theory, transporting cargo from Yantian Port to other provinces only requires the change of train engines at Henggang Station. But the practice is very complicated and not practical. Even though the Ministry of Railway is pushing a strategy of "direct through service between railway lines and the networks, enterprises, and ports," this practice is quite different in reality. The purpose of this policy adopted by the Ministry of Railway is to connect the railway with enterprises and ports, and impose unified management and operation on the connected railways of the whole country. If YICT is to enter the system, YICT has to invest huge amounts of money to upgrade and reform its railway foundation facilities (load issue) and equipment (upgrade current locomotive system as electric ones). With all these improvements, the result would be about two hours less transit time. YICT is not certain of the return of such an investment, which is why Ping-Yan Railway has not joined the state system as promoted by the Ministry of Railway.

Moreover, because of problems in the management structure, mechanism, and basic conditions of the national railway system, there are still some disputes between Ping-Yan Railway and the Ministry of Railway in promoting shipping-train multipurpose transport. Shipping-train multipurpose transport of containers is not popular in China. Not many yards or stations in the country have capacity to accept container trains and the necessary loading and unloading equipment and facilities are inadequate. These factors reduce the efficiency of rail container transportation. Only Shanghai and Kunming have railway container yards, but yard equipment and facilities are inadequate or lacking in lifting equipment and machines. Ping-Yan Railway Co. Ltd. is communicating with the Ministry of Railway about promoting a combination of shipping and railway trains. Because of the difference among organizational systems and operational concepts, it would be quite difficult to make such promotion. Both entities are still running their own ways. As a result, Ping-Yan Railway and the state railway appear to be incompatible with each other.

Uncompetitive Cost of Transport

Since Ping-Yan Railway has no service through the state railway network, it is hard to run new block trains on the line. In addition, the freight rate is high compared to state lines. Freight rates on the state railway are set by the Ministry of Railway, and the freight rate of Yantian Railway is set by the Provincial Price Bureau. As revealed by this study, the freight rate of 1 ton/km on the

Ping-Yan Railway line is three to four times that of the state railway network. The disadvantage in transportation rate is obvious.

At the same time, highway transport has taken some market share of short-distance railway transport. The key hinterland radiated by Ping-Yan Railway is the Pearl River Delta with rather short distance transport. Compared to road transport, railway transport not only lacks flexibility, it also takes longer. Because of this, some block trains have no cargo to transport even after adopting a free-of-charge strategy on some special trains.

Chinese Railway Management System and Problems

The highly concentrated and unified management system formed in the pattern of the planned economy once played an active role in our railway system, but along with the gradual transformation of the planned economy to a socialist market economy, the traditional railway system is gradually showing its inadaptability to reform and development.

One of the outstanding points is the lack of distinction between functions of the government and those of the enterprises. The railway transportation enterprises have not separated with the administrative departments of the government. In our national economic management system, the Ministry of Railway is the only administrative department in direct charge of enterprises among the traditional industrial departments. Moreover, monopoly in the railway transportation area has not been broken. Although external alternative competition exists, the railway transportation sector is short of internal competition.

Today, the Chinese railway management system still combines the functions of the government and the enterprises. The combined functions of the Ministry of Railway include the following:

■ **Function of government administrative department.** As a government administrative department, the railway transportation management department has the following major functions: making strategy, guideline, and industrial policies for the development of the railway sector; making plans and implementing measures for the mid- and long-term development of railway transportation; implementing legislation on railway transportation; formulating technical standards and important industrial rules and regulations; controlling overall balance; regulating industrial distribution and conducting macroscopic readjustment and control; guiding and developing the market for railway transportation to keep the economy in normal operation and fair competition; and providing information data, statistics, analysis materials and other services to railway transportation enterprises.

■ **Function of industry supervision.** Supervision is an important function of industry management. Railway supervision includes supervision of 1) the railway network, 2) the transportation rate, 3) fairness in marshaling, commanding, and distributing capacity, 4) railway technical standards, 5) transportation service quality and standards, 6) railway safety, and 7) railway market access.

continued on next page

■ **Function of transportation organization.** Unified command of transportation marshaling is an absolutely necessary function of the railway determined by the trade particularity of networking and linkage of railways.

■ **Function of investing and raising funds for railway construction.** Long-term planning for railway construction and development is a function of the government, but the functions of absorbing and using (including fundraising) the investment in railway construction should belong to enterprises.

Railways have the characteristics of a network, which has caused serious monopoly and high concentration of China's railway industry for a long period. The management is half-militarized. The Ministry of Railway not only boasts the administrative function of the government, but also the operation management function of the enterprises, concentrating all the ownership of assets and all the rights of making operation decisions and commanding production. It is the manager, but also the investor and the operator. The property is blurred and functions undefined. All the operation and settlement would be managed by the settlement center of the Ministry of Railway, which implements unified operation and unified distribution. What is most obvious is that private capital and foreign capital would lose their rights of disposing of the money once they access the railway system.

Conclusion

Role of the Government in Planning and Constructing Port Roads

The role of the government is evident and instructive in the process of planning, construction, development, and operation of Yantian Port and port roads. The government has played an instructive role in the construction of transport foundation facilities in the port area by providing support and assistance in policies and finance. The government's role and position is key and decisive:

- **Establishing development direction.** Policies and laws like the Law of Highway and the Port Law clearly define the functions of the government and enterprises. The planning and construction of the Yantian Port area and the backup land area as well as the port traffic foundation facilities are completed by the government department, providing the foundation for other development.
- **Encouraging implementation of foreign investment policies.** In the port development process, particularly in the initial period, the government lacked the financial resources for the huge amount of construction. The implementation of policies encouraging foreign investment and the streamlining of all project approval procedures played extremely important roles in the development of the port area, and increased the efficiency and flexibility of the operation of the port projects.
- **Providing financial support for construction.** The Municipal Government of Shenzhen City has been dedicated to improving the investment and business environment in the area, maintaining economic growth momentum. As a wide range of industries and manufacturing was established, the Municipal Government of Shenzhen started to provide attractive conditions for international enterprises such as Wal-Mart, Sony, and Mattel to establish purchasing and global distribution centers in the port area. At the same time, the government has invested heavily in the construction of port roads to increase throughput of the port and enhance port collection.

Relationship Between Government and Enterprises

In view of the construction of Yantian Port and the development of port transport foundation facilities, the government has not decentralized its general planning rights. The Law of Highway clearly defines the role of the government in planning port area roads and road foundation facilities. Transport investment and construction of port enterprises must proceed according to the plans and requirements of the administrative departments of the government at different levels. In the initial period of the construction of Yantian Port, the functions of the government and enterprises were combined.

After China transformed from a planned economic system to a market economic system, especially after the Port Law was promulgated in 2004, the monopoly over the operation of port enterprises was abolished. Fair competition among government, private sectors, and foreign investors is advocated and private sectors and foreign investors are encouraged to develop and use port resources legally within the scope of the plan. The functions of the government and the enterprises are also separated. In addition to the planning function, the government does not operate facilities, which was a common practice in the past. When a government entity had both the responsibility to regulate and run a business, it inevitably encountered conflict-of-interest issues.

Experiences and Lessons

The port industry requires a long period of construction and a large amount of investment in the initial phase. The model in which the government leads the initial development and construction to attract professional companies with management experiences to run it is worthy of consideration. Such a model combines the government's dynamic force and leading role with companies' management experiences, generating a rational equity and enterprise management structures.

Government must understand and maintain the authority to make the final plan. This approach balances the requirements of various development aspects in the region, not just the interest of enterprises. The construction of Shenzhen's Shen-Yan Second Channel was financed by the government after the benefits of different sectors were balanced. This channel has become the traffic trunk from Shenzhen to Yantian and the tourist sites, Da Meisha and Xiao Meisha, in eastern Shenzhen. This channel prohibits container trucks in the urban area. This is a major strategy of separating social vehicles from cargo trucks as well.

Rail service is a key component to a perfect port road collection, distribution, and transportation system. It is necessary to let the railway system make more contributions to the port transportation system, making it a complete collection, distribution, and transportation system. In fact, the operation situation of Ping-Yan Railway in Yantian Port reflects the structural lag state of China's current railway system in promoting ship-railway container multitransport. The monopoly of the Chinese railway sector seriously baffles the development of local railways operated and managed by private and foreign enterprises.

Appendix A

Several Provisions on Construction and Management of Yantian Port

Municipal Government of Shenzhen

Article 1. These provisions apply to the planning of the Yantian Port area and the backup land area (hereinafter referred to as Yantian Port) and the management of land, construction, and environmental protection.

Article 2. The development and construction of Yantian Port shall be under the unified planning, unified construction, and unified operation of Shenzhen Dongpeng Enterprise Co. Ltd. (hereinafter referred to as Dongpeng Company), except where there is other provision in these provisions).

Article 3. The general plan, specified plan, and public works plan of Yantian Port shall be submitted to the Municipal Construction Bureau of Shenzhen (hereinafter referred to as Construction Bureau) for examination and approval.

The People's Government of Shenzhen City (hereinafter referred to as Municipal Government) can change the plan and adjust the construction projects as necessary.

Article 4. The railways, highways, public works, and other public facilities and the land used shall be transferred to related departments for management according to provisions.

Article 5. Except the land use stated in above article 4, all other land use in Yantian Port shall be paid.


(1) The land area of 166 m² used in the initial phase project of Yantian Port shall be priced at 50 RMB/m² at present, which shall be paid by Dongpeng Company. The income shall be counted into the land development fund of Shenzhen City.

(2) Except the land use stated in the above paragraph, Dongpeng Company shall pay for the land based on the actual area to be used. The price of the land shall be examined and determined by the municipal state-land administrative department based on the standard publicized by the Municipal Government after deducting the cost publicized.

Article 6. To use the land that needs to be paid for, Dongpeng Company shall sign a land-use contract with the municipal state-land administrative department and get a land-use certificate after paying.

Legal action on transfer and mortgage of the land-use rights shall be adopted according to the "Land Administration Regulations of Shenzhen Special Economic Zone" and related detailed rules on implementation.

Article 7. The Municipal Government shall keep the right to remise the land of Yantian Port as necessary, but the land stated in paragraph (1) of Article 5 is excepted.



Article 8. The income from the land remising organized by the Municipal Government as stated in the above paragraph shall be counted into the land development fund of Shenzhen City, after compensating the development cost paid by Dongpeng Company.

Article 9. Dongpeng Company shall be entrusted to collect land-use fees in Yantian Port. The standard and methods of collection shall be defined according to related provisions.

Article 10. The fund invested by Dongpeng Company for the development of Yantian Port shall be managed in the special account established according to the provisions on capital construction financial management, and an analysis statement of development cost by items shall be made and submitted to the Municipal Audit Bureau for examination and to the Financial Bureau, Construction Bureau, and Communications Bureau for the record.

Article 11. Except that the design of key projects defined by the Construction Bureau shall be examined and approved by the Bureau, the design examination and approval of other construction projects shall be authorized to Dongpeng Company, and the construction license also shall be issued by the company. But these activities shall be reported to the Construction Bureau for the record.

Article 12. Dongpeng Company shall take responsibility for ensuring that the construction units shall implement the projects according to the approved requirements on planning, engineering design, and land use.

Article 13. The bid invitation and engineering management of the development and construction projects shall be organized and conducted by Dongpeng Company under the supervision and examination of the Construction Bureau according to law.

Article 14. Environmental protection management of Yantian Port shall be conducted according to related laws, regulations, and provisions promulgated by the state, the province, and the city.

Article 15. The explanation of these provisions shall be made by the Construction Bureau.

Article 16. These provisions shall come into enforcement on the day they are promulgated.

December 27, 1988

Appendix B

Traffic Volume of Expressways Connected to Yantian Port

Daily Transport Flow of Hui-Yan, Yan-Ba, and Yan-Pai Expressways, 1994–2007

(Number of vehicles)

Year	Hui-Yan Expressway	Yan-Ba Expressway	Yan-Pai Expressway
1994	13,197	–	–
1995	9,734	–	–
1996	11,325	–	–
1997	17,650	–	–
1998	18,494	–	–
1999	20,191	–	–
2000	22,360	–	–
2001	24,701	5,620	–
2002	30,569	5,332	–
2003	34,970	7,333	–
2004	42,744	9,356	–
2005	51,607	11,543	–
2006	56,513	14,141	15,815
2007	68,645	12,798	26,313

Glossary

Backup land area of port:	The backup area refers to areas adjacent to port facility (see figure 11).
BOT:	Build-operate-transfer. The government transfers franchising to private enterprises (include foreign companies) by contract. It allows those enterprises to construct and operate typical public infrastructure by financing, and allows those enterprises to collect charges or sell products to recover their loan and earn a profit. After the period of franchise is fulfilled, those infrastructures should be turned back to the government.
Collection, distribution, and transportation:	A system of transportation network consisting of various roadways, rail, and waterways carrying cargo to and from the port.
Enterprise:	Enterprise is a common and general term for a business entity, such as firm or company. It does not have the rulemaking authority of a government agency.
Group:	This is a common and general term for a business group, corporate group, or (sometimes) alliance.
Port accommodation road:	Port accommodation road is the road connected to the port area, and the function is to serve cargo to and from port.
Port accommodation rail:	Port accommodation rail is the railway connection to the port area, and the function is to serve cargo to and from port.
Port transport:	In China, port transport includes road transport and railway transport. Air transport also should be included, but this is rare in China.

Appendix D

Abbreviations

BOT	build-operate-transfer
CEPA	Mainland and Hong Kong Closer Economic Partnership Arrangement
Co. Ltd.	Company Limited
Exp.	expansion
HWYIC	Hutchison Whampoa Yantian Investment Company Limited
JICA	Japan International Cooperation Agency
km	kilometer
Ltd.	Limited
PCU	passenger car unit
RMB	Chinese currency
SPC	State Planning Commission (Predecessor of NRDC, National Reform and Development Commission)
SPR	Shenzhen Ping-Yan Railway Company Limited
STED	Shenzhen Tiepeng Enterprise Development Company Limited
TEU	20-foot equivalent unit
WTO	World Trade Organization
YICT	Yantian International Container Terminal Company Limited